

Window Installation

Impact and Structural Installations



These instructions are applicable for the following Structural installations:

Ultimate Wood Double Hung Magnum

These instructions are applicable for the following StormPlus products:

Ultimate Casement¹

Ultimate Double Hung G2

Ultimate Direct Glaze Polygon/Round Top

Ultimate Wood Double Hung Magnum

Ultimate Wood Casement¹

Ultimate Wood Double Hung

Ultimate Wood Direct Glaze Polygon/Round Top

Top



NOTE: Certified IZ3 Ultimate Casement, Ultimate Double G2, Ultimate Wood Double Hung, and Ultimate Direct Glaze Polygon/Round Top units must be installed using jamb screws or structural brackets. Certified IZ3 Ultimate Double Hung Magnum units must be installed using the jamb screw method only.



NOTE: IZ4 Ultimate Casement and Direct Glaze units must be installed using jamb screws or structural brackets spaced at 4" from corners and 12" maximum on center.

ABSTRACT

These instructions advise the window installer/carpenter/contractor on the recommended way to install Marvin windows where structural installation is necessary, including those rated for use in Impact Zones 2, 3, and 4.

In addition to steps for installing your window, included within are: Rough opening (RO) preparation for recessed masonry applications; RO prep and sealing details for standard wood frame construction; detailed fastening methods and more.

The procedures within these instructions are consistent with those used in testing to achieve the advertised PG (Performance Grade) rating. Contact your local Marvin dealer if your construction scenario differs from those detailed within.

Regional standard practices, environmental conditions and codes may vary and supersede the procedures contained within. The responsibility for compliance is yours: the installer, inspector, and owner(s). See the Technical Installation Specifications inside for more details.

¹Includes Picture, Transom, Round Tops and Polygon

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Technical Installation Specifications

The following details are specified for proper installation and for the unit to meet the advertised design pressure (DP) rating.

- Rough Opening Width: 1/4"–1" (6–25) wider than window/door frame outside measurement.
- Rough Opening Height: 1/4"–1/2" (6–13) higher than window/door frame outside measurement.
- Masonry Opening Width: 1/4"–1/2" (6–13) wider than window/door frame outside measurement.
- Masonry Opening Height: 1/8"–1/4" (3–6) higher than window/door frame outside measurement.

Architectural Detail Manual Specifications:

- Rough Opening: Width 1" (25); Height 1/2" (13).
- Masonry Opening: Width 1/2" (13); Height 1/4" (6).
- If using less than a nominal 2" x buck in masonry openings; the rough opening must be no more than 1/2" (13) wider and 1/4" (6) taller than the outside measurement of the frame. Installation methods are limited to Jamb Screw method using 3/16" concrete screws.
- Marvin recommends the use of sloped sills on all concrete openings (either pre-cast or poured).
- **Regarding recessed masonry openings:** the window frame must not come in direct contact with masonry/concrete/concrete block. Construct framing from treated lumber or plywood and fasten to the masonry opening jambs, header, and sill. This framing must be designed (and anchored to the opening) properly to withstand certified and advertised performance grade (PG) ratings for your particular unit.
- For installations in typical wood frame construction (with sheathing and building paper or air barrier material) where a continuous air barrier system is used, refer to ASTM E2112–01 or reference the "**Continuous Air Barrier Systems**" section for details on preparing the rough opening and sealing the installation.
- For installations in concrete block, or masonry construction, etc., follow local codes for sealing and water management details.



Be aware that the use of rigid sill pans and other barriers will decrease the rough opening height clearance. Adjust opening dimensions accordingly.



WARNING: Drilling, sawing, sanding or machining wood products generates wood dust, a substance known to the State of California to cause cancer. Avoid inhaling wood dust or use a dust mask or other safeguards for personal protection. California Health and Safety Code Section 25249.6.

- Properly flash and/or seal all windows at the exterior perimeter.
- Sealants used for installation must be Grade NS Class 25 per ASTM C920 and compatible with the building exterior, window exterior surface, and flashing/water management materials.
- Flashing materials must comply with ASTM E2112–01, section 5.13 and be compatible with all materials used in installation including panning systems, air barriers and building papers, sheathing, and the window unit.
Flashing material must not contain asphalt and must be compatible with flexible PVC (vinyl) when used in conjunction with nailing fin.
- Optional foams used for installation must be low expansion only. Foam and foam application must comply with ASTM E2112–01, SEC 5.9.2.
- Shims are required between the window frame and framing members at all locking points and at every point of attachment (excluding nailing fin and brick mould casing) as well as at all points detailed within these instructions.
- For units with flat casing install with installation brackets, structural masonry brackets, or jamb screws.
- Do not use chemically treated products for shim material.
- Fasteners penetrating chemically treated lumber must be a minimum of 0.90 oz/ft² zinc hot dipped galvanized or stainless steel type 304 or 316.
- Clad window frames must not come into direct contact with chemically treated wood products.



Please consult with local authorities to properly dispose and/or recycle all packaging, materials, and waste.



WARNING: Older homes may contain lead-based paint, which may be disturbed when replacing windows or performing renovations. Consult state or local authorities for safe handling, disposal, or abatement requirements. For more information, go to www.epa.gov/lead

Before You Begin

Installer and Builder Information

- Read these instructions thoroughly BEFORE beginning to install your Marvin window product.
- **Always** provide a copy of these instructions for the current or future building owner.
- Plan sizing of rough opening and clearance from exterior finishing systems to allow for normal materials shrinkage or shifting (e.g. wood structure with brick veneer, allow adequate clearance at sill). Failure to do so can void the Marvin warranty coverage.
- Refer to the **Technical Installation Specifications** section for technical specifications regarding the installation of this product. These installation requirements as well as the details in this section must be followed to achieve the advertised performance grade (PG) rating of this product.
- It is the responsibility of the builder, installer and subcontractors to protect the interior and exterior of windows or doors from excessive contact with harsh chemical washes, construction material contamination and moisture. Damage to glazing, hardware, weatherstrip and cladding/wood can occur. Protect with painters tape and/or protective sheathing as required. Follow all guidelines regarding material use, preparation, personal safety and disposal.
- Refer to the enclosed painting and staining instructions on the last page for exterior and interior finish instructions.
- Contact your Marvin supplier if you have any questions regarding product and materials used in manufacturing or questions on replacement parts.






After Market Products

Alterations to Marvin products including window films, insulating or reflective interior window treatments or additional glazings can cause excessive heat buildup and/or condensation. They may lead to premature failures not covered under warranty by Marvin Windows and Doors.

Before purchasing or applying any product that may affect the installation or performance of Marvin windows contact the manufacturer of after market product/glazings that are not supplied by Marvin and request written product use, associated warranties and damage coverage. Provide this information and warranties to the end user and/or building owner for future reference.

Hazard Notations

Please familiarize yourself with the following hazard notations used throughout this instruction.

Caution	Warning	Seek Assistance	Tips/Hints	Impact Product
				
Mistakes or misuse could cause damage to the window or result in faulty installation and unit performance.	Mistakes or misuse could result in personal injury and/or severe damage to unit, equipment, and/or structure.	Help from another individual is necessary to perform this task safely and correctly.	Information on alternative procedures, definitions, helpful hints.	Steps related to Impact rated products only.

You Will Need to Supply


- | | |
|--|--------------------|
| Safety glasses | Hearing protection |
| Level | Square |
| Hammer | Wood shims |
| Insulation | Tape measure |
| Perimeter sealant ¹ | Sill pan flashing |
| Backing material (foam backing rod) | |
| Low expansion foam insulation ² | |
| Appropriate fastener (see Jamb/Sill Screw Chart) | |
| Construction adhesive ³ | |

NOTE: Numbers listed in parentheses () are metric equivalents in millimeters rounded to the nearest whole number.

Standard Parts Shipped

Units are sent with hardware; clad units are sent with four (4) nailing fin corner gaskets. Follow installation instructions included with part if applicable. UDHM units are sent with a fastening package and supplemental installation instructions.

NOTE: Depending on the installation method, other material may be needed to properly prepare and seal the installation such as self sealing adhesive membrane, building paper, and seam seal tape, etc.



WARNING: Always practice safety! Wear the appropriate eye, ear and hand protection, especially when working with power tools.

¹Sealant must be Grade NS Class 25 per ASTM C920 and compatible with building exterior and window surface.

²Optional, use low expansion foam insulation only. Foam and foam application must comply with ASTM E2112, section 5.9.2.

³APA rated AFG-01 spec

Step 1: Rough Opening and Framing Requirements

This section gives requirements for framing and rough opening clearances. Masonry or concrete openings must be lined with a treated wood product (wood buck). You must fasten the buck to the masonry opening in a fashion that will withstand conditions which would be encountered under the certified and advertised PG ratings for this window. The structural integrity of this installation is only as good as the bond between the wood buck and the masonry opening. For more details, contact your Marvin representative.

NOTE: Wood buck material thickness may vary. Illustrations show a 1/2" plywood and 2 x 4 buck. Installations using material less than 2" nominal material must use the jamb screw method of attachment and use 3/16" concrete anchors.

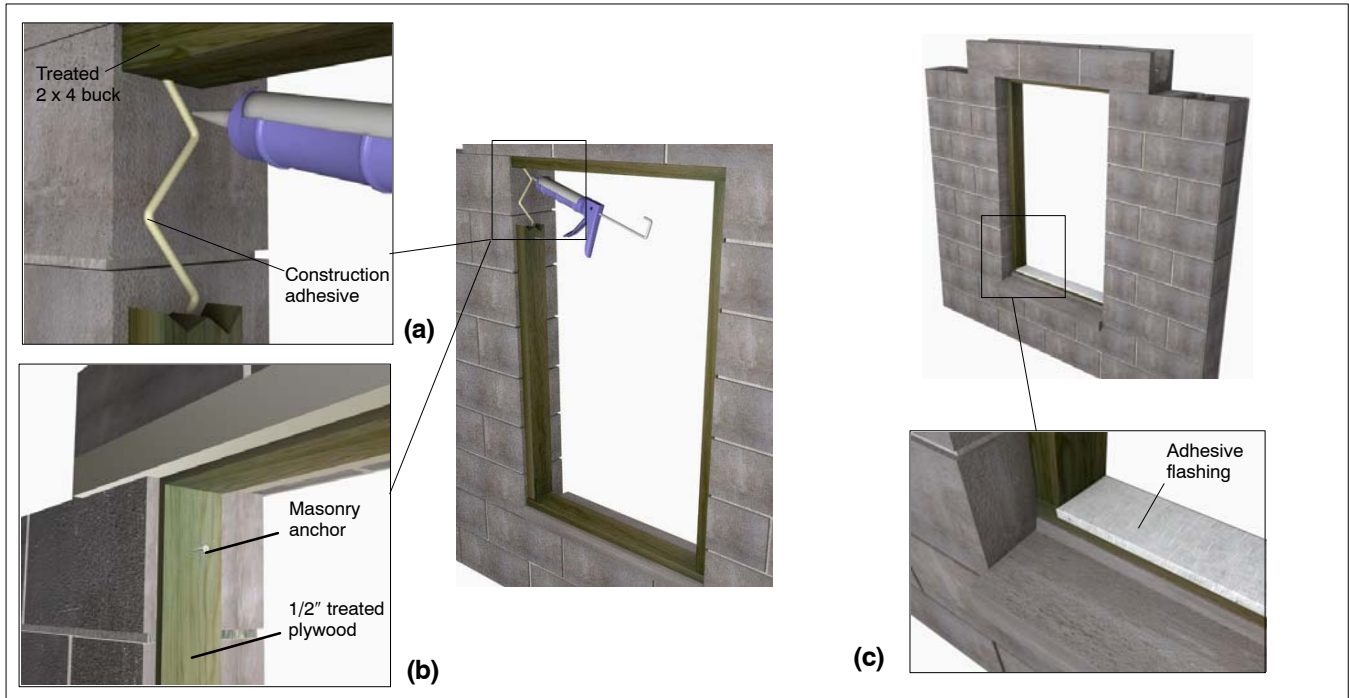


Figure 1: Preparing openings for concrete block openings.

1. On concrete block, masonry, or similar situations, line the sides, head jamb, and sill with treated lumber. Attach the lumber to the masonry opening with construction adhesive and masonry anchors which should penetrate the masonry opening by at least 1"–1 1/2" (25–38). See figure 1a and 1b.
2. For standard wood frame construction, prepare the opening following local codes, ASTM E2112–1, or follow the steps in the “**Continuous Air Barrier Systems**” section.
3. If rigid panning is used, place a bead of silicone or construction adhesive over any fasteners used to hold the panning to the sill.

NOTE: If your installation requires screwing through the sill for structural purposes, place a bead of sealant where the screws will penetrate the rigid sill panning.

4. The window frame must not come in contact with treated lumber. If you will not be using rigid panning or shimming at the sill, apply a barrier such as a self-sealing adhesive flashing to the rough opening sill. See figure 1c.

Step 1: Rough Opening and Framing Requirements (cont.)

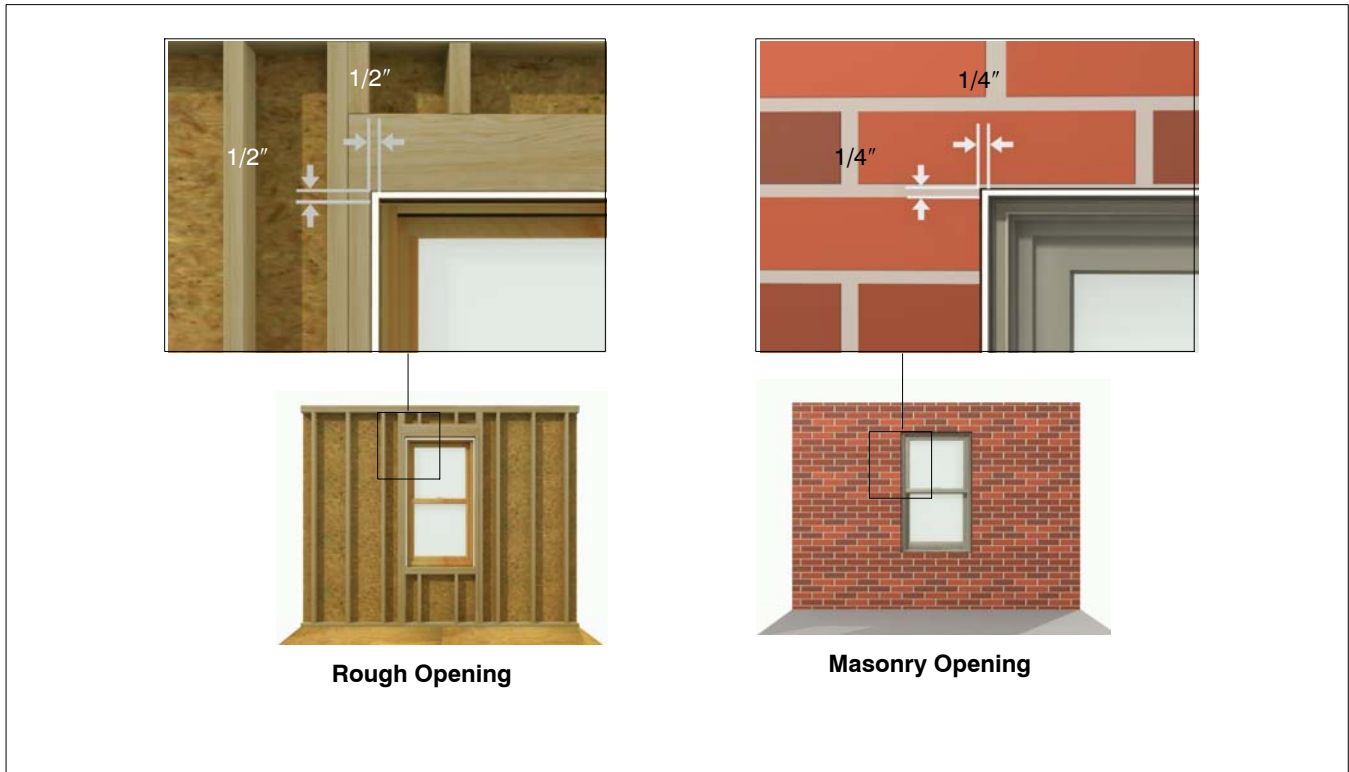


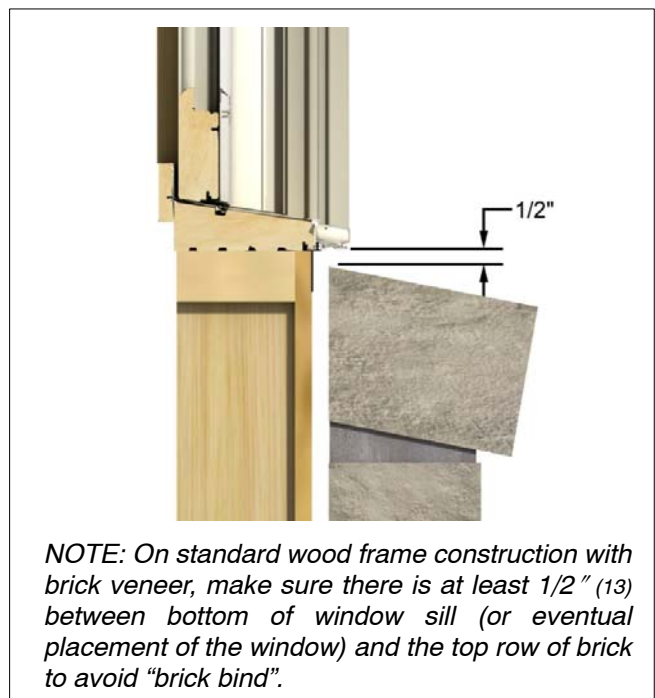
Figure 2: Preparing openings for concrete block openings.

5. **Rough openings¹ (RO)** should be 1" (25) wider than the outside measurement of the frame and 1/2" (13) higher. **Masonry openings (MO)** should be 1/2" (13) wider than the outside measurement of the frame or casing and 1/4" (6) higher than the outside measurement of the frame or casing. When framing rough opening, care should be taken to ensure the sill plate is level and the opening is square, straight and plumb. See figure 2.

ATTENTION: Be aware that use of rigid sill pans and other barriers will decrease the rough opening height clearance. Adjust opening dimensions accordingly.



CAUTION! If the previous conditions are not met, the installer must take corrective actions to alter the opening(s) before proceeding. It is also essential that the sheathing behind the wall be a solid surface to ensure that the unit can be secured firmly to the wall.



NOTE: On standard wood frame construction with brick veneer, make sure there is at least 1/2" (13) between bottom of window sill (or eventual placement of the window) and the top row of brick to avoid "brick bind".

¹Rough opening gap must be no more than 1/4" for products certified for use in IZ4 regions.

Step 2: Unit Preparation

1. Remove the protective packaging from the unit and dispose/recycle properly. Inspect unit for any hidden damage and report immediately to your Marvin representative. Provide the customer service number etched on one of the top corners of the glass. See figure 3.
2. Remove any shipping clips unless noted otherwise.

NOTE: Do not remove the vinyl shipping blocks or shipping tube assembly on Wood Ultimate Double Hungs until installation is complete (unless installing with jamb screws).

3. If used on clad units, position the factory applied nailing fin/drip cap in the upright position. See figure 4.
4. On wood units with brick mould casing, apply sealant at the casing to frame joint along the jambs and head jamb, at the sill horn to casing joint, and at the miter corners of the casing. See figure 5. Tool the bead to ensure proper adhesion to both surfaces.
5. If you are installing a window with structural brackets, fasten to the window now. Follow the fastener spacing in the “**Jamb/Sill Screw Chart**”. Follow the instructions provided with the brackets for details on how to fasten to unit. Ultimate Double Hung Magnum units are sent with supplemental instructions which detail how to remove the sash and jamb fillers.
6. If you will be fastening with screws through the jambs, head jambs, and sill, remove your sash and covers or liners at this time. Refer to the section, “**Removing Interior Stops, Liners, and Fillers**” and “**Removing Sash**” for details.
7. Install jamb extension before installing the window in the rough or masonry opening. Follow instructions provided with the jamb extension.

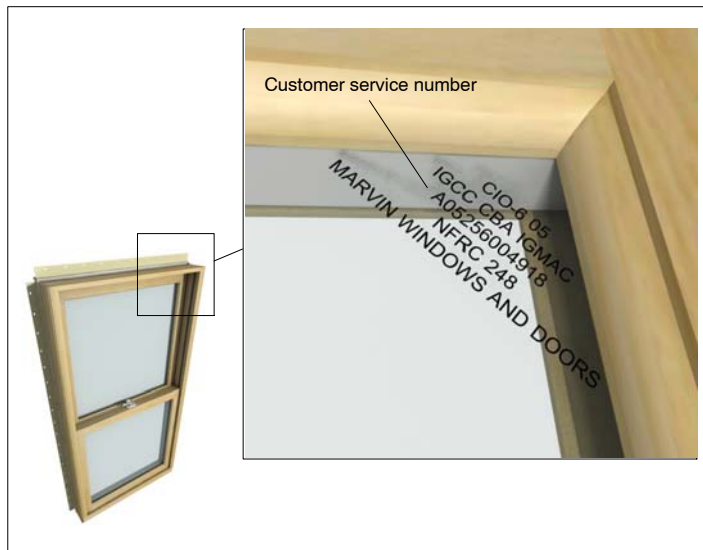


Figure 3:

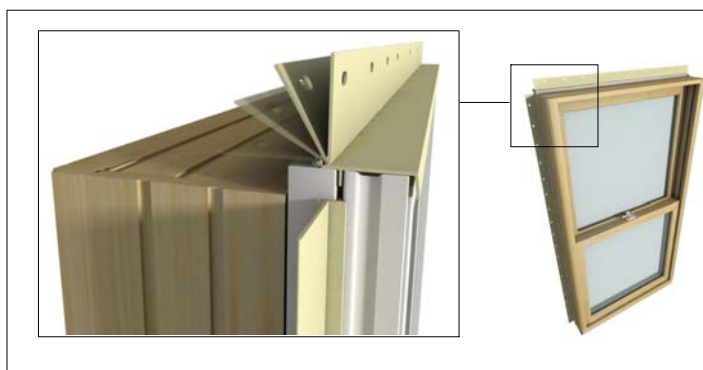


Figure 4: Extend nailing fin.



Figure 5: Apply back-aulking to BMC.

Step 3: Installing the Window

The following steps provide details for structural fastening of the window to the opening. When installing windows with nailing fin or wood brick mould casing, it may be desirable to first attach the window using these fastening methods in conjunction with steps 1–5. Then complete the installation by fastening with structural brackets or screws. Always follow fastener spacing outlined in the “**Jamb/Sill Screw Chart**” section. On applicable construction using a continuous air barrier system, prepare the opening before installing the window. Refer to the “**Continuous Air Barrier Systems**” section for details.

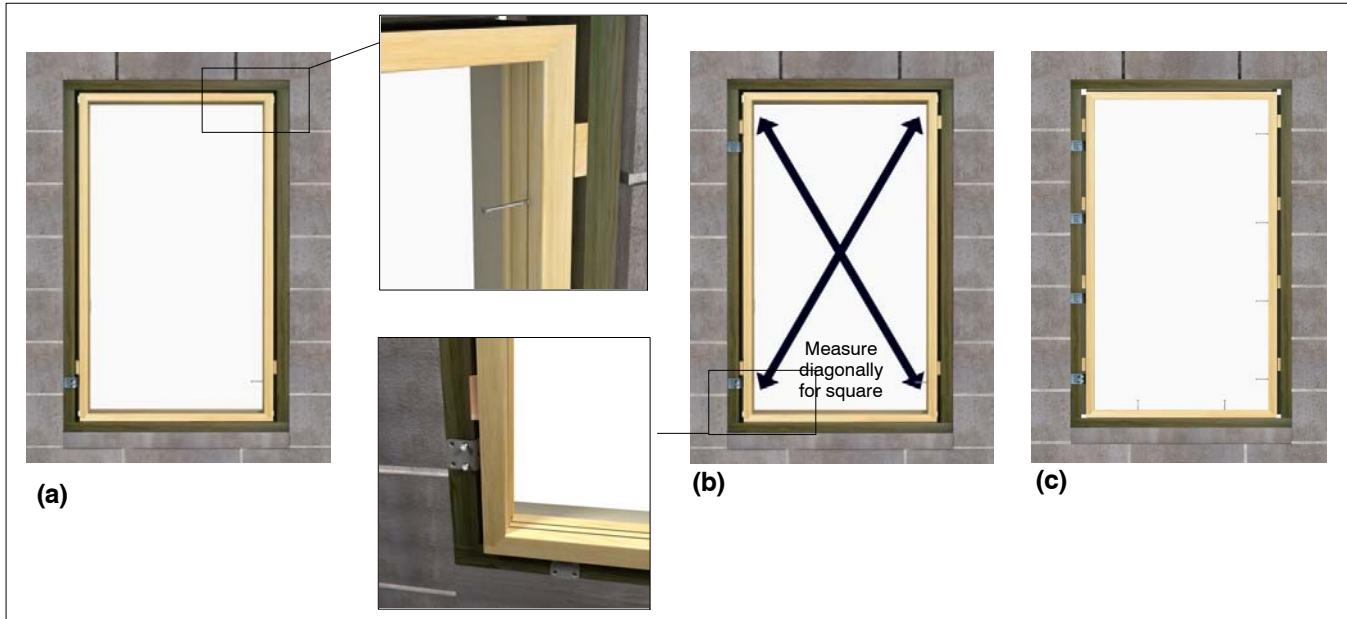


Figure 6: Plumb and square unit. (Illustration shows both structural bracket and jamb screw installation.)



Seek Assistance: Some large windows and/or assemblies are very heavy. Avoid injury by getting help to lift and position the window into the rough opening.

1. If rigid sill pan is not used, pan sill with alternate methods or shim under window sill to ensure it does not come in direct contact with treated lumber.
2. On some larger units such as the Ultimate Double Hung Magnum, it may be necessary to remove the sash prior to installation. See the sash removal section for details.
3. Center the window in the opening. Level at the sill and plumb the frame (interior/exterior) to desired depth.
4. Fasten and shim the jambs at the bottom with the appropriate fastener (follow instructions in the “**Fastening Methods**” section). See figure 6a.

NOTE: Some units such as the Ultimate Double Hung Magnum, IZ3 Ultimate Double Hung, and Clad Ultimate Double Hung Next Generation IZ3 feature unique fastening systems. For these windows refer to the “Special Fastening Systems” section for details.

5. Fasten and shim at the top corners to square the unit in the opening. Take diagonal measurements of the window. When equal, the window is square in the opening. Adjust the shims and fasteners until the unit is square in the opening. See figure 6b.



CAUTION: Proper shimming is extremely important. Under-shimming or over-shimming will result in bowed jambs and or head jamb. Both conditions can contribute to improper window operation and performance.



Installation Tip: On operating units, one method to ensure that the unit is installed square is to check the reveal (gap) between the operating sash and the frame. An even reveal around the entire sash generally indicates a correctly installed unit and will ensure smooth operation.

6. Complete shimming and fastening at locations and spacing specified in the “**Jamb/Sill Screw Chart**”. See figure 6c.
7. Recheck the diagonals one more time to make sure the unit is square in the opening. Adjust fasteners as necessary to bring to square.
8. Once the unit is installed square and plumb, operate the sash (on operable units) to make sure it is operating properly. If not, you may have to make some additional adjustments to the shims and fasteners.
9. If removed, replace your stops, covers, and liners.

Fastening Methods and Jamb/Sill Screw Chart

Although structural installations may involve fastening with wood brick mould casing or nailing fin, there are two ways to fasten your jambs to the opening for structural purposes:

1. #8 Wood screws (or 3/16" concrete anchors), 6" (152) from all corners and 15" (381) on center around the perimeter.

or

2. Structural brackets, 6" (152) from all corners and 15" (381) on center around the perimeter.

Refer to the "**Jamb/Sill Screw Chart**" for proper fastening requirements for your particular product. Illustrations show a concrete block opening but apply to typical wood frame construction as well.

NOTE: All mullied units require fastening with two screws or brackets on each side of the mull joint no more than 6" (152) from mull joint.

NOTE: Single UDH products do not require fastening at the sill. Multiple wide UDH assemblies require anchoring at the sill mullion. UDHM IZ3 units must be installed with jamb screws, fastening at the sill is not required.

Structural Brackets

1. Wrap brackets around the framing/buck/opening, fasten with two #8 x 1 5/8" screws. Angle the screws approximately 15 degrees away from the window. Always shim above or behind installation brackets.

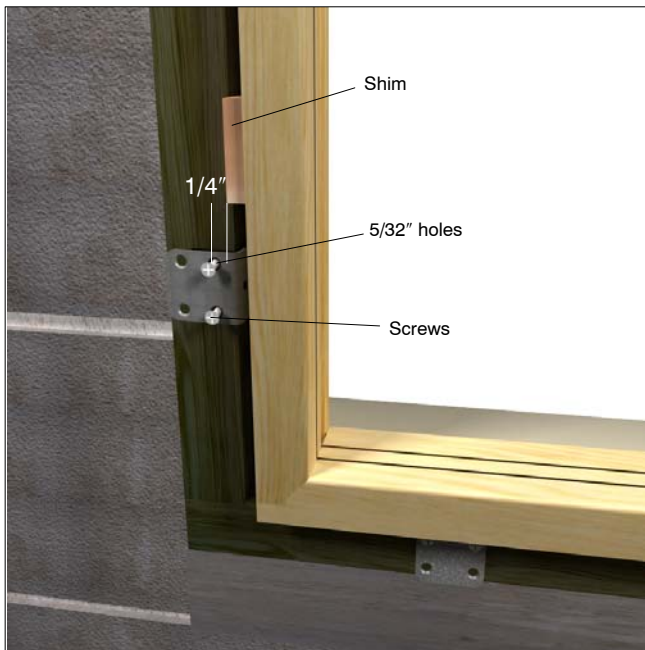


Figure 7

Jamb/Sill Screw Chart

Product	Jamb Screw Length	Sill Screw Length
Clad Ultimate Casement Family and Direct Glaze	3" (76)	2 1/2" (64)
Wood Ultimate Casement Family and Direct Glaze	3" (76)	3 1/2" (89)
Wood Ultimate Double Hung Family	2 1/2" (64)	N/A
Clad Ultimate Double Hung Next Generation Family	3" (76)	N/A
Ultimate Double Hung Magnum Family*	Supplied with unit	N/A

* Use predrilled holes in frame members.

Jamb/Sill Screws

1. Space fasteners along jambs and head jambs no more than 6" (152) from each corner and 15" (381) on center. Follow same spacing for sills when applicable. *WUCA RT IZ3 units require fasteners 4" (102) from the corners and 15" (381) on center.*

NOTE: Structural brackets are allowable replacements for screws if fastening at the sill is necessary.

2. After removing covers or liners, fasten units to the framing with #8 wood screws or 3/16" concrete anchors¹. Adjust length of fastener so that it penetrates no less than 1 1/4" (32) into framing/opening. When fastening through the sill, always pre-drill and fill hole with sealant before driving the screw. Always place a shim behind or above the screw location on jambs and head jambs.

NOTE: When using masonry anchors, be sure to follow manufacturer's guidelines for proper installation. Some types require pre-drilling.

¹Use concrete anchors when wood buck material is less than 2" nominal thickness.

Fastening Methods (cont.)

3. On **Ultimate Casement** units, position the screw so that it misses any operating hardware (if applicable). With typical installations, you should be able to locate the screw in the center groove in the frame and just to the exterior of the kerf that holds the head jamb stop. See figure 8.

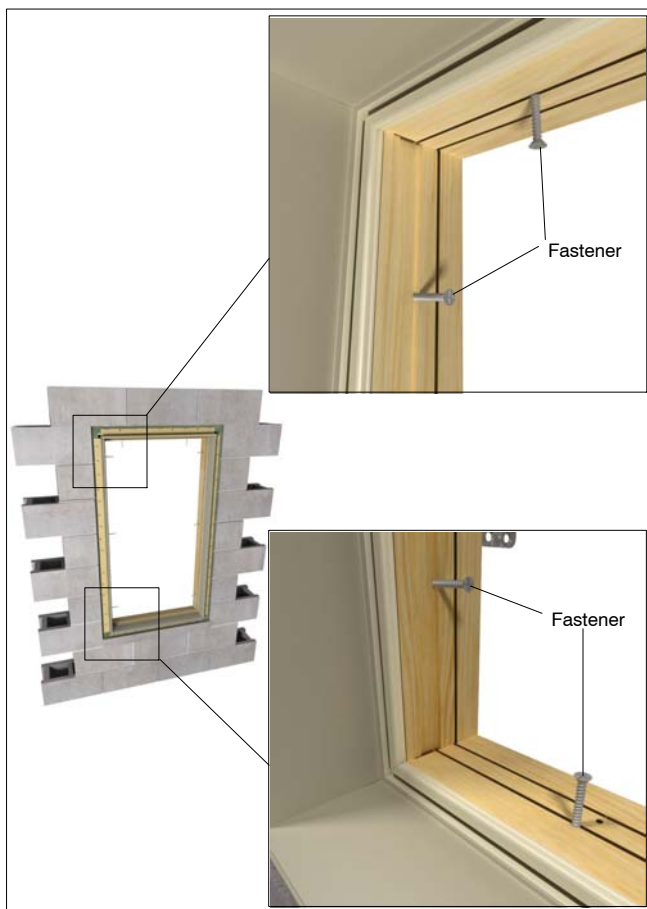


Figure 8: Exterior view, fastening through Ultimate Casement frames.

4. On **Wood Ultimate Double Hung** units, locate the screw in the jamb carrier kerf (jambs) and in the kerf used to hold the parting stop (head jamb). Make sure to countersink the screw so that it doesn't interfere with installation of the jamb liner and/or parting stop. See figure 9.

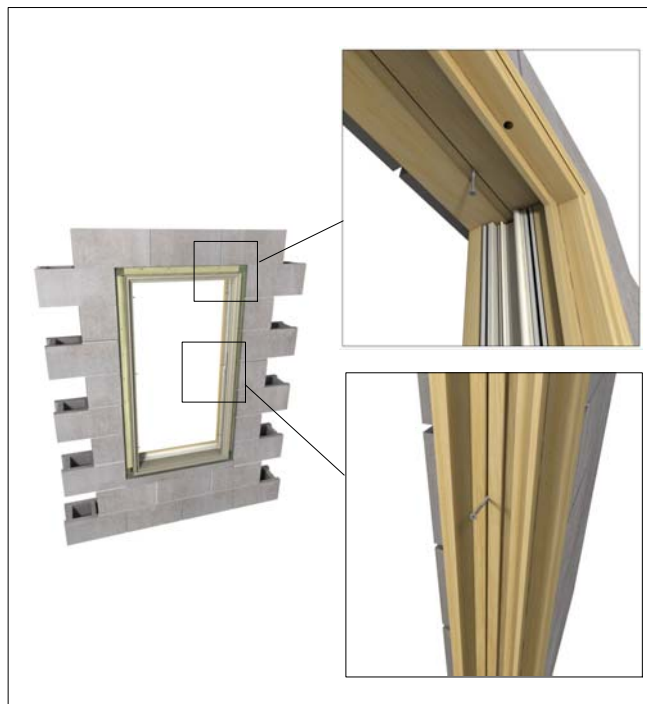


Figure 9: Exterior View, fastening through WUDH frames.

Step 4: Final Installation Procedures

This section does not include details on sealing installations that incorporate a continuous air barrier system such as house wrap or building paper in standard wood frame construction. For flashing details in this application refer to the section, “**Continuous Air Barrier Systems – Flashing the Installation**”.

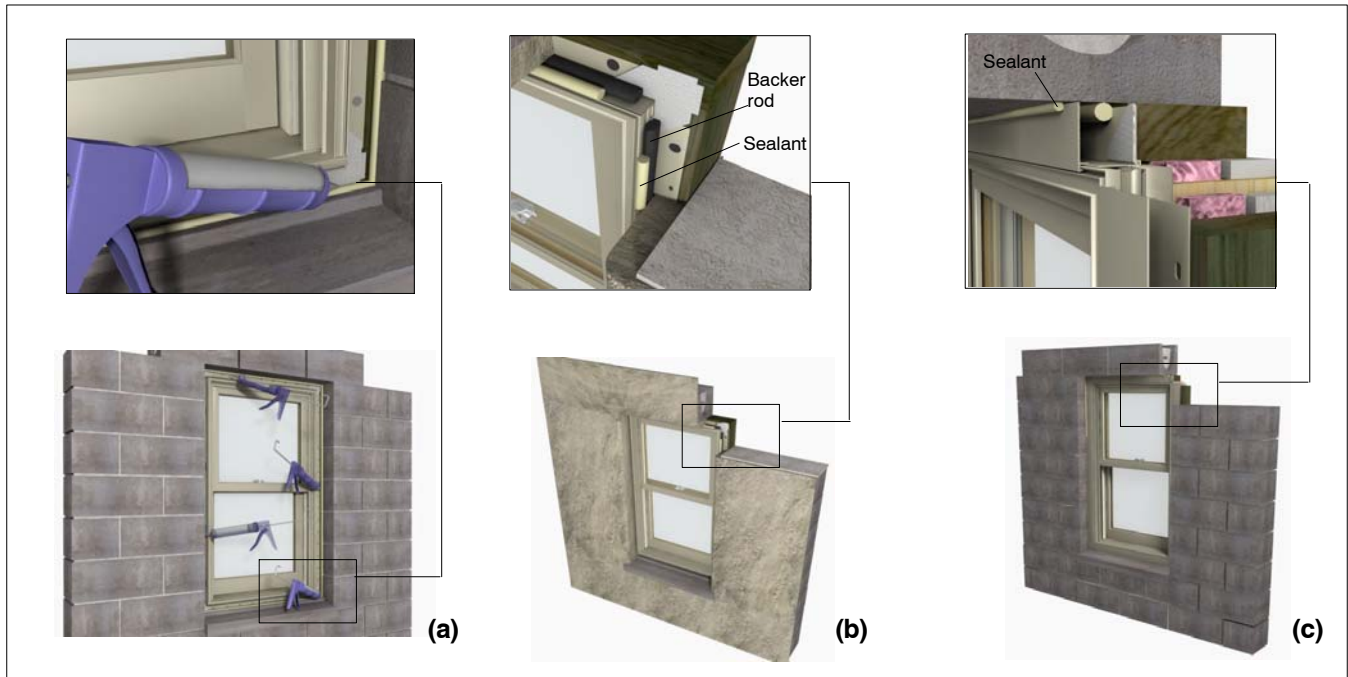


Figure 10: Sealing recessed masonry openings

1. Place a bead of sealant at the wood buck to masonry joint. See figure 10a.
2. For recessed masonry applications, Marvin recommends sealing at the buck to frame joint with appropriate width backer rod and sealant around the entire perimeter. Finish as applicable local code dictates. See figure 10b.
3. In some situations such as recessed masonry openings, you can use frame expander or other clad accessories to finish the exterior. If this is the case, apply a bead of sealant between the accessory and the masonry at the head jamb and jamb sections. Leave the sill portion unsealed to allow water to escape. See figure 10c.

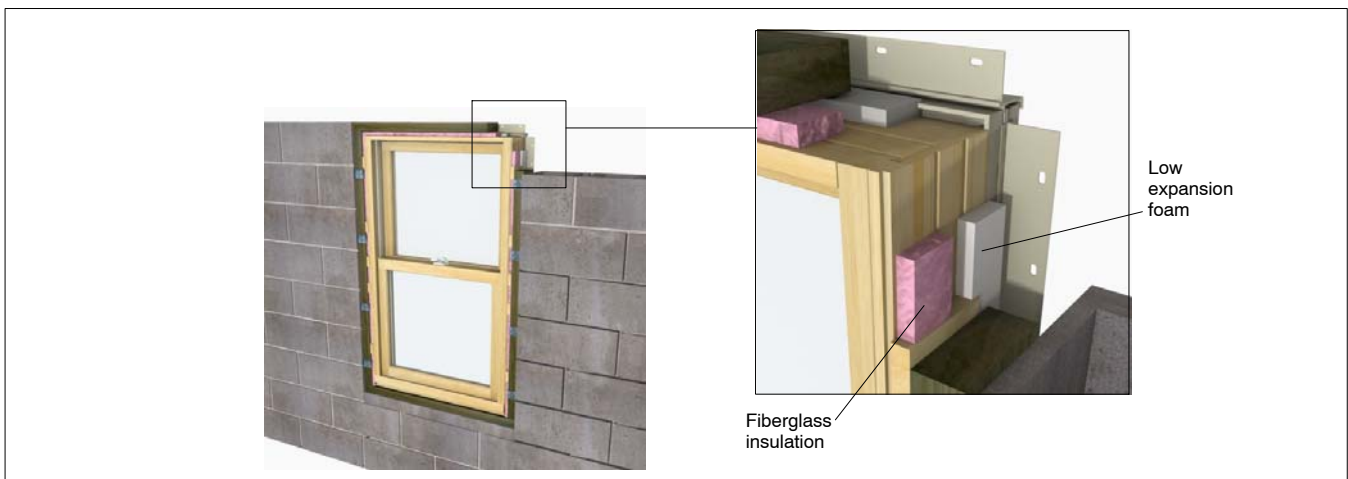


Figure 11: Insulating the rough opening

4. Apply a 1"–2" (25–51) thick bead of low expansion foam insulation on the back side of the nailing fin, brick mould casing or other trim. Do not apply too much as it is possible to bow the jambs. Now insulate loosely around the window with fiberglass insulation. See figure 11.
5. **Interior and mullion trim:** Install mullion trim after interior trim or casing is applied. On Wood Ultimate Double Hung units, be sure to use nails and staples that are no longer than 3/4" (19). Place fasteners at least 1" (25) from the edge of interior jamb liner.

Continuous Air Barrier Systems – Preparing the Opening

The method shown below is Method A1 using a TYPE III flash pan. For step by step instructions on how to prepare an opening using this method, refer to www.marvin.com/ROprep for instructions “Window Rough Opening Prep and Flashing Method A1–Membrane Drainage System”. Refer to ASTM E2112–07 for other rough opening preparations that are more appropriate for your situation.

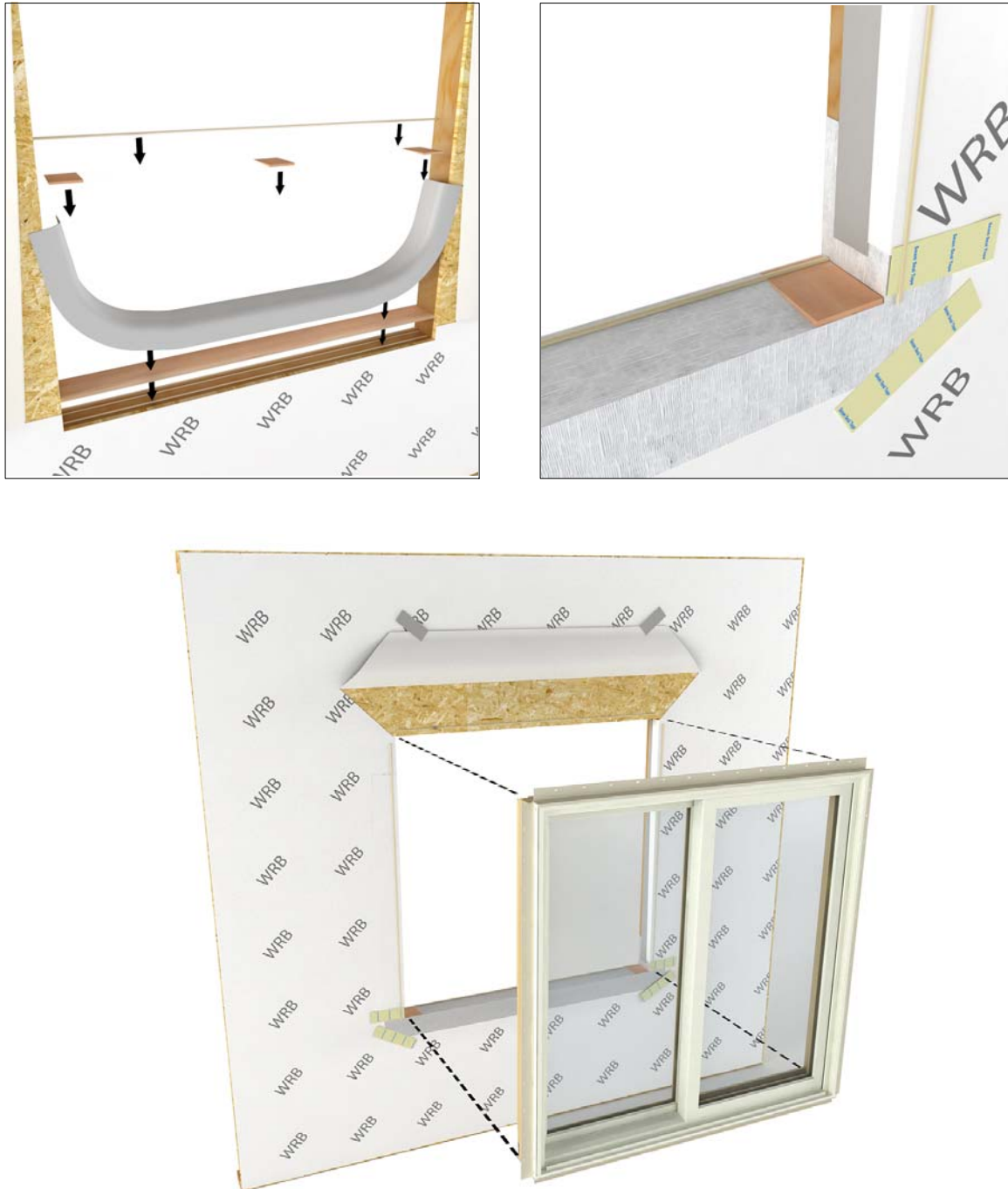


Figure 12: Preparing the opening.

Continuous Air Barrier Systems – Flashing the Installation



1. Flash the installation in a weather board fashion. For step by step instructions, refer to www.marvin.com/Roprep for instructions titled “Window Rough Opening Prep and Flashing Method A1–Membrane Drainage System”.

Figure 13: Sealing the installation in air barrier applications.

Window Flashing Detail (non-recessed masonry)

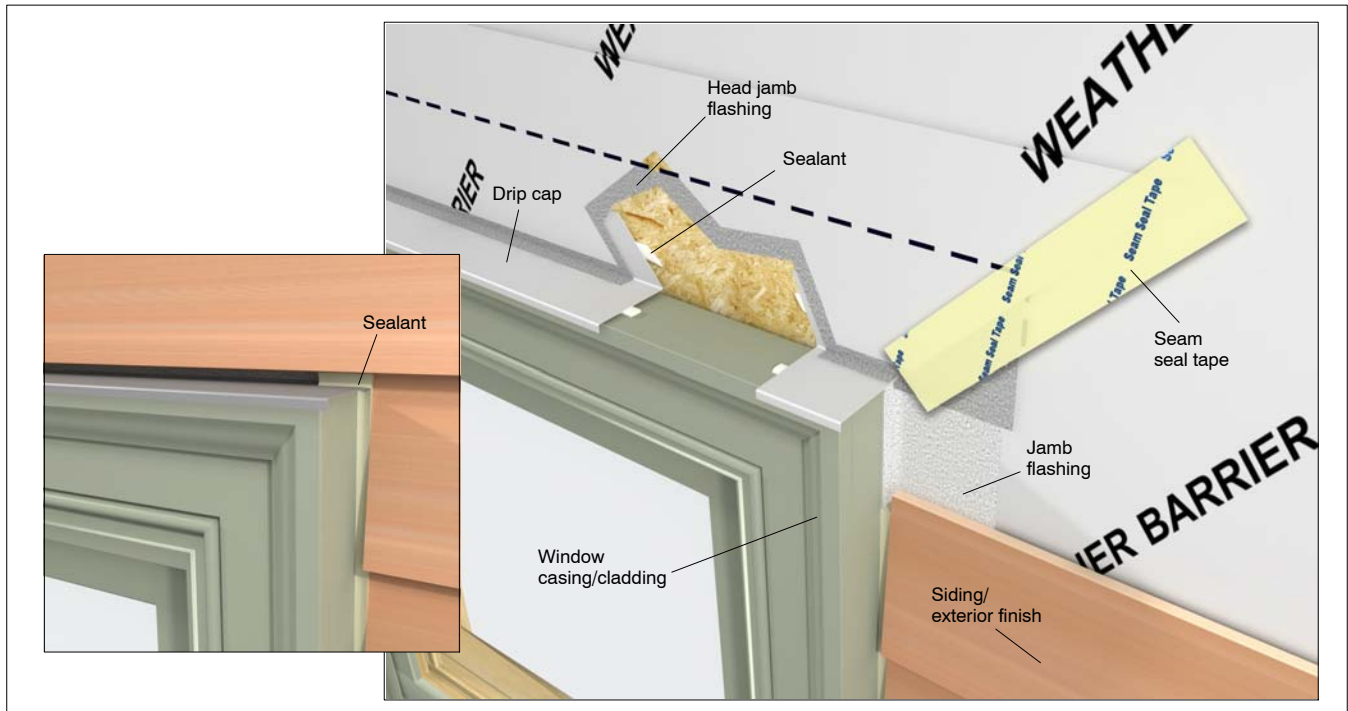


Figure 14: Flashing windows with casing in typical wood frame construction (non recessed masonry).

NOTE: Figure 14 shows a window with casing but the flashing detail also applies to any clad window product.

For installation in typical wood frame construction or brick veneer (non-recessed masonry openings), figure 14 shows the proper flashing detail in shingle style fashion. Once the exterior finish such as siding or brick veneer is installed, a bead of sealant should be applied between the finish and the window/window casing along the sides and approximately 1–2” (25–51) in from the ends at the head jamb (see insert). Use a backer rod when necessary.